Environmental Policies Affecting Manure Management

Growing concerns about the potential impacts of these changes on environmental quality have spurred local, State, and Federal action to mitigate environmental impacts of animal manure. Complaints about water quality and air quality (primarily odor) fuel most of the conflicts between the animal sector and the general population. The U.S. Environmental Protection Agency (EPA) revised Clean Water Act regulations in 2003 for controlling runoff of manure nutrients from the largest animal feeding operations (AFOs). Clean Water Act regulations now require that animal feeding operations designated as concentrated animal feeding operations, or CAFOs, and needing a National Pollutant Discharge Elimination System (NPDES) permit (those that discharge or propose to discharge to surface waters), develop and implement a nutrient management plan. Such a plan sets a limit on the amount of nutrients that can be applied per acre of land. Also under the 2003 regulations, CAFOs that are not required to have an NPDES permit, but wish to claim the stormwater exemption[3] for runoff from fields, must develop and implement a nutrient management plan to demonstrate that due care is being taken to minimize polluted runoff from fields receiving manure. If a waterway becomes polluted with animal waste from field runoff and a CAFO does not have a nutrient plan, it would be in violation of the Clean Water Act.

[3] Agricultural stormwater discharges are specifically exempted from permit requirements in the Clean Water Act. These include runoff from agricultural fields.

Atmospheric emissions of pollutants are regulated by the Clean Air Act (CAA). The CAA authorizes regulatory programs primarily for protecting human health. EPA has recently initiated development of regulations for reducing fine particulates in the atmosphere (referred to as $PM_{2.5}$, for particles less than 2.5 microns in size). The Clean Air Act requires State, local, and tribal governments to identify areas not meeting national air quality standards for fine particulates (one of the six criteria pollutants regulated under the Act) (U.S. EPA, 2004b). States with designated non-attainment areas must submit plans that outline how they will meet the standards by 2010. This regulation could affect animal operations because ammonia is a major precursor of fine particulates. Controlling ammonia from animal operations would be a likely priority in non-attainment areas with high concentrations of animals (U.S. EPA, 2000).

Also covering air pollution are the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Emergency Planning and Community Right-to-Know Act (EPCRA). Both laws utilize information disclosure to increase the information available to government and citizens about the sources and magnitude of chemical releases to the environment. CERCLA requires that facilities report to EPA when releasing more than a "reportable quantity" (e.g., 100 pounds in a 24-hour period) of a hazardous substance. EPCRA requires that a facility report to State and local authorities any releases reported under CERCLA. EPA is authorized to require long-term remedial action that permanently and significantly reduces threats to public health. Originally focused on hazardous wastes from industrial plants, the increased size and consolidation of animal feeding operations may make their ammonia and hydrogen sulfide emissions subject to the notification provisions of CERCLA. EPA has enforced the CERCLA and EPCRA reporting requirements against AFO release of hazardous pollutants

in two cases, although use of these laws for agricultural emissions is controversial (Copeland, 2008).

Most States have implemented regulations—including permits, licenses, and zoning requirements—for controlling at least some of the environmental impacts of AFOs. North Carolina entered a legal agreement with the State's largest swine producers to develop innovative waste management strategies that would replace uncovered lagoon and sprayfield systems to prevent a repeat of the massive damage to water resources caused by Hurricane Floyd in 1995 (Williams, 2004). The purpose of the 1997 North Carolina moratorium was to give the State time to design and enact a regulatory system that would ensure that waste structures were sound, that waste application methods were adequate, and that waste utilization plans were in place. Iowa, Pennsylvania, Arkansas, and Kentucky have also introduced rules for curbing water pollution, ammonia, and odor from AFOs (Patton and Seidl, 1999; U.S. EPA, 2002).

Agricultural-residential conflicts at the rural-urban fringe seem to be increasing as residential development expands further into rural areas, while market conditions push farmers to intensify their production (Bergstrom and Centner, 1989; Jacobson et al., 2006). Conflicts over environmental concerns are most prevalent for animal operations (Duke and Malcolm, 2003; Centner, 2002). Proximity can result in citizen complaints to local authorities and actual or threatened lawsuits over perceived threats to health and environmental quality, even when no laws have been broken. Such conflicts may force farmers to modify their production practices. Adoption of "acceptable" or "qualifying" management practices is one way farmers can demonstrate due care and possibly protect themselves from conflict over environmental quality (Centner, 2002).

To defray the costs of meeting the regulations, producers can apply for financial assistance from USDA's Environmental Quality Incentives Program. A farmer may receive up to $450,000 for all EQIP contracts entered during the term of the Farm Act (typically 5-7 years) to help them develop and implement a nutrient management plan, construct appropriate animal and manure handling and storage facilities, or transfer and apply manure to land in an approved manner (USDA/ERS, 2009).